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☐ 1: *Environ Res* 2000 May;83(1):54-66

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Accumulation of cadmium, zinc, and copper in maternal blood and developmental placental tissue: differences between Finland, Estonia, and St. Petersburg.

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Cadmium, zinc, and copper from placental tissue and blood samples at the first trimester ($n = 64$) and at term ($n = 152$) were analyzed; the welfare of newborns and placental 7-ethoxycoumarin O-deethylase (ECOD) activities in vitro were determined. The study material was collected from Finland, Estonia, and Russia. The results demonstrate that Cd starts to accumulate in the placenta during the first trimester and that Zn and Cu contents were significantly higher at the first trimester than at term. Among nonsmokers a negative correlation was found between placental Cu content and birth weight of neonates. Among smokers a positive correlation between placental Zn content and birth weight and ECOD activity was found. The birth weights correlated inversely with the length of time the mothers smoked. The highest Cd concentrations were detected in the samples collected from St. Petersburg. The data demonstrate an inverse accumulation of Zn and Cd throughout the pregnancy in the placenta and maternal blood samples. Zn may act as a positive marker or even an enzymatic enhancement for the human placental vital functions. Smoking, parity, age, and especially the place of residence affect the Cd, Zn, and Cu contents and ratios in placenta and mother's blood.

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Abstract

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